

1. With \_\_\_\_\_, a quantity increases by a fixed percentage of the whole per unit time.

- a. linear growth
- b. exponential growth

2. The world population reached 6 billion in

- a. 1927.
- b. 1987.
- c. 1999.
- d. 1804

3. Most \_\_\_\_\_ countries are in Africa, Asia, and Latin America.

- a. developing
- b. developed

4. Which of the following is not greater in developing countries than in developed countries?

- a. population under age 15
- b. annual population growth rate
- c. average GNP per person
- d. infant mortality

5. Which of the following is considered a nonrenewable resource?

- a. fresh air
- b. solar energy
- c. metallic minerals
- d. biological diversity

6. The tragedy of the commons refers to the overuse of

- a. solar capital.
- b. synthetic chemicals.
- c. governmental regulation.
- d. unowned or jointly owned resources

7. The traditional decision making system considers

- a. the interaction between social and environmental issues.
- b. the interaction between economic and environmental issues.
- c. social, economic, and environmental issues separately.
- d. the interaction between social, economic and environmental issues.

8. The \_\_\_\_\_ was accompanied by a shift from reliance on renewable energy sources to reliance on nonrenewable energy sources.

- a. information revolution
- b. industrial revolution
- c. hunter-gatherer revolution
- d. agricultural revolution

9. In the 1800's, which congressman questioned the idea of inexhaustible resources?

- a. Henry David Thoreau
- b. John Muir
- c. Theodore Roosevelt
- d. George Perkins Marsh

10. Who pioneered scientific forest management?

- a. George Perkins Marsh
- b. Rachel Carson
- c. John Muir
- d. Gifford Pinchot

11. The environmental movement began during the

- a. 1990's.
- b. 1960's.
- c. 1930's.
- d. 1890's

12. Rachel Carson's book Silent Spring

- a. described the effects of pesticides in the environment.
- b. was published in 1982.
- c. won her a Nobel Prize.
- d. was not widely read or taken seriously for many years after it was published.

13. During which president's term did the environmental movement suffer significant setbacks?

- a. Bill Clinton
- b. Richard Nixon
- c. Theodore Roosevelt
- d. Ronald Reagan

14. What is the first step in the scientific study of a phenomenon?

- a. carry out a test
- b. devise a hypothesis
- c. ask questions
- d. develop a model

15. What is the function of a control group?

- a. It prevents researcher bias
- b. It assures that results of a test are due to the variable being tested
- c. It allows for double-blind experiments
- d. It increases sample size

16. A series of equations that describes the movement of the waters in the Earth's oceans and can be used to predict weather patterns in coastal areas would be an example of a

- a. graphical model.
- b. mental model.
- c. mathematical model.
- d. conceptual model.

17. In a \_\_\_\_\_ feedback system, a change in a certain direction causes the system to change further in the same direction.

- a. negative
- b. positive

18. Which of the following is not an organic compound?

- a. glucose
- b. sulfuric acid
- c. methane gas
- d. DDT

19. Still water stored behind a dam has a large amount of

- a. heat energy.
- b. chemical energy.
- c. kinetic energy.
- d. potential energy.

20. One consequence of the \_\_\_\_\_ is that everything we throw away is actually still here, in one form or another.

- a. atomic theory of matter
- b. law of conservation of matter
- c. first law of thermodynamics
- d. second law of thermodynamics

21. The harmful effects of a chemical pollutant will be determined by the pollutant's

- a. concentration, origin, and persistence.
- b. chemical nature, concentration, and persistence.
- c. origin, chemical nature, and concentration.
- d. concentration, origin, and chemical nature.

22. A nuclear power plant carries out controlled

- a. nuclear fusion.
- b. nuclear fission.

23. As a car is driven, about 90 percent of the energy in the gasoline fuel is degraded to low-quality heat energy and escapes into space. Only about 10 percent of the energy can actually be used to power the car. This is an illustration of the

- a. first law of thermodynamics.
- b. atomic theory of matter.
- c. law of conservation of matter.
- d. second law of thermodynamics.

24. Which of the following levels of organization is the most inclusive?

- a. population
- b. ecosystem
- c. biosphere
- d. community

25. A(n) \_\_\_\_\_ includes both living and non-living components.

- a. population
- b. species
- c. ecosystem
- d. community

26. The presence in the atmosphere of natural greenhouse gases is vital to continued life on earth.

- a. true
- b. false

27. The chemicals dissolved in the water of a lake are a(n) \_\_\_\_\_ component of the lake ecosystem.

- a. biotic
- b. abiotic

28. According to the \_\_\_\_\_, there are maximum and minimum limits for physical conditions and concentrations of substances beyond which no members of a particular species can survive.

- a. first law of thermodynamics
- b. law of conservation of mass
- c. the limiting factor principle
- d. law of tolerance

29. Phytoplankton in a freshwater ecosystem are

- a. primary consumers.
- b. tertiary consumers.
- c. secondary consumers.
- d. producers

30. Which of the following is not a heterotroph?

- a. a producer
- b. a secondary consumer
- c. a primary consumer
- d. a decomposer

31. In most cells, energy is released when oxygen is used to convert organic nutrients into carbon dioxide and water. This process is called

- a. chemosynthesis.
- b. aerobic respiration.
- c. chemosynthesis.
- d. fermentation

32. At every trophic level

- a. most incoming energy is used in metabolism.
- b. most incoming energy is transferred into organic wastes.
- c. most incoming energy is transferred to the next lowest level.
- d. most incoming energy is transferred to the next highest level.

33. What is systems analysis?

- a. observations of food webs.
- b. generating maps with GIS.
- c. modeling ecosystem function.
- d. applied field research

34. Which of the following is an ecosystem service?

- a. a coal-fired power plant
- b. a litter pickup crew
- c. climate control
- d. a sewage treatment plant

35. Genetic variability in a population arises through

- a. genetic drift.
- b. gene flow.
- c. mutation.
- d. natural selection.

36 .In order for natural selection to occur

- a. the trait must not be heritable.
- b. there must be uniformity for a trait in a population.
- c. the trait must lead to differential reproduction.
- d. offspring must be larger than their parents



37. Ecologists say that a niche is like a species' \_\_\_\_\_, while habitat is like its \_\_\_\_\_.

- a. family history; occupation
- b. occupation, address
- c. appearance; physiology
- d. education; occupation

38. A species' realized niche is \_\_\_\_\_ than its fundamental niche

- a. larger
- b. smaller

39. Which of the following is a specialist species?

- a. coyote
- b. red-cockaded woodpecker
- c. housefly
- d. white-tailed deer

40. Biologists estimate that \_\_\_\_\_ of the species that ever existed are now extinct.

- a. 25
- b. 99 percent
- c. 50 percent
- d. 10 percent

41. What evolutionary process occurs through geographic isolation and reproductive isolation?

- a. coevolution.
- b. convergence.
- c. extinction.
- d. speciation.

42. Many biologists believe we are currently entering the Earth's sixth great

- a. mass extinction.
- b. adaptive radiation.
- c. coevolution.
- d. ice age

43. What are the short-term properties in the troposphere at a particular place and time called?

- a. climate
- b. weather

44. The northern hemisphere is tilted toward the sun in \_\_\_\_\_ and away from it in \_\_\_\_\_.

- a. December, June
- b. December, January
- c. June, August
- d. June, December

45. The natural trapping of heat by the troposphere is called the

- a. area effect.
- b. rain shadow effect.
- c. greenhouse effect.
- d. Coriolis effect.

46. Most UV radiation is prevented from reaching the earth's surface by the

- a. El Niño-Southern Oscillation.
- b. Hadley cells.
- c. ozone layer.
- d. greenhouse gases.

47. Deserts take a long time to recover from disturbance because of their

- a. high species diversity.
- b. slow plant growth.
- c. fast nutrient cycling.
- d. permafrost.

48. Which type of forest contains the largest diversity of tree species?

- a. temperate forest
- b. tropical rain forest
- c. chaparral
- d. boreal forest

49. Biotic potential and \_\_\_\_\_ determine \_\_\_\_\_.

- a. environmental resistance; carrying capacity
- b. carrying capacity; environmental resistance
- c. intrinsic rate of increase; carrying capacity
- d. environmental resistance; intrinsic rate of increase

50. A J-shaped curve is characteristic of

- a. exponential growth.
- b. a population that has overshoot its carrying capacity.
- c. zero population growth.
- d. logistic growth.

51. Competition for resource, predation, parasitism, and disease are examples of \_\_\_\_\_ population controls.

- a. density-dependent
- b. density-independen

52. Which of the following species is a K-selected species?

- a. dandelion
- b. mouse
- c. cockroach
- d. blue whale

53. A conservation biologist would be most interested in

- a. privatizing public lands.
- b. protecting endangered ecosystems.
- c. reducing human population growth.
- d. maintaining high populations of game species

54. According to the theory of island biogeography, a \_\_\_\_\_ will have the greatest number of species.

- a. small island, distant from the mainland
- b. large island, close to the mainland
- c. large island, distant from the mainland
- d. small island, close to the mainland

55. Without the presence of sea otters, sea urchins which would otherwise overgraze kelp beds, dramatically changing the marine community of which the urchins and otters are a part. For this reason, sea otters are considered

- a. generalist species.
- b. alien species.
- c. indicator species.
- d. keystone species

56. Trout are an excellent \_\_\_\_\_ because they are very sensitive to water quality.

- a. generalist species
- b. indicator species
- c. alien species
- d. keystone species

57. Which of the following is an example of intraspecific competition?

- a. hawks and owls eating mice from the same field
- b. an oak tree and a maple tree growing next to each other
- c. starlings taking over bluebird nesting cavities
- d. largemouth bass hunting for food in a pond

58. Which of the following represents a mutualistic species interaction?

- a. lions eating a dead gazelle
- b. ferns growing on a tree branch
- c. fleas on a dog
- d. bees pollinating flowers

59. The ability of a living system to bounce back after a disturbance that is not too drastic is

- a. resilience.
- b. primary succession.
- c. inertia.
- d. constancy.

60. Where are estuaries found?

- a. rocky shores
- b. where rivers flow into the ocean.
- c. the abyssal zone
- d. on the continental slope

